SFCG-23
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Results of WRC 2003

(SFCG Agenda Item 9.1)

WRC 2003 achieved good results, in close conformity with Resolution 18-1R4. The text below seeks to award a well-earned 'pat on the back' to all SFCG participants, while the next section provides an item-by-item commentary.

SFCG Take a "Pat on the Back"

Since the conclusion of the World Radiocommunication Conference (WRC 2003) held in Geneva, Switzerland, from June 9 to July 4, 2003, under the auspices of the International Telecommunication Union (ITU), the world space science community has access to seven new or improved frequency allocations.

The space science requirements and the technical foundations upon which the new allocations were based had been established in the technical groups of the ITU during the period since the previous conference, Istanbul, 2000. The space agencies of the world also worked to refine the technical and operational requirements within the Space Frequency Coordination Group (SFCG). This group, worked diligently to acquaint the ITU member countries and the regional groupings with the requirements of the space science community, and the possible methods that could be used to share the needed frequency bands between both space science radio systems and other space and terrestrial radio systems either already using the frequency bands mentioned or soon to be introduced in those bands.

The usefulness of the results to space science community can be seen from this brief summary:

1. The United Nations Conference on the Environment and Development held in Brazil in 1992 clearly identified an urgent requirement for radar systems operating from space platforms to be able to sense the environment in a frequency band that could "see through" the canopy of forests around the world, to assist in tracking the migration of herds of wild animals. Such a frequency band can only be found in the range from 300 to 600 MHz, and WRC 2003 deemed fit to allocate, albeit on a secondary basis, the range from 432 – 438 MHz to the earth exploration-satellite service (EESS) to conduct such observations. Considering that this frequency band is already used by a number of terrestrial systems, complex protections had to be devised to prevent the space science radars from causing harmful interference to current users. The willingness of the SFCG members to facilitate operational coordination with existing systems was crucial in enabling the allocation to be made. Additionally, the SFCG's offer to post mission information and ephemeris data on its Web site for such SAR missions in the 432-438 MHz band was accepted by WRC-03 and was instrumental in obtaining the allocation.

2. For some years the EESS has enjoyed access to the frequency band from 5250 – 5460 MHz to conduct active radar observations. Successful missions, such as

Radarsat, use synthetic aperture radar imaging systems operating in this frequency band to monitor environmental change and support resource sustainability. During preparations for the WRC 2000, the need to extend that allocation up to 5570 MHz was identified, in order to improve the resolution of the delivered images by about 10 times. WRC 2003 made the new allocation and identified appropriate mechanisms to protect existing terrestrial systems.

3. WRC 2003 removed the very restrictive footnote 5.551A from the frequency band allocated to the EESS (active) from 35.5 – 36.0 GHz. A new footnote was adopted providing for power flux density limits at the surface of the Earth on transmissions from the EESS, but this new footnote improves the sharing conditions among the services allocated.

4. Space missions to deep space include exploration of the planets and have been responsible for many years for the production of spectacular photographic images of the planets. Such spacecraft, operating in the farthest regions of the solar system, require highly directional transmitting systems and highly sensitive receiving systems to deliver their data back to Earth. WRC 2003 improved the status of the allocation for new space research service (SRS) transmitting systems in the frequency band 7145 – 7235 MHz.

5. The conference provided for the safe operation of new deep space receiving systems by deleting the allocation to the Inter-satellite service in the frequency range 32.0 - 32.3 GHz. This creates a situation where the frequency band 31.8 –32.3 GHz may be used by the SRS without the harmful interference that could have been caused by systems operating in the Inter-satellite service.

6. The space research service also operates in orbits much closer to the Earth than deep space. These orbits are said to be in the 'near Earth' environment, and they include low earth orbit and the geostationary and geosynchronous orbits. The requirement for a wideband data downlink (from space to Earth) has been established for some years, and WRC 2003 allocated the band 25.5 – 27.0 GHz to the SRS for this purpose. This allocation to the SRS is the only wideband allocation to that service below 37 GHz, and will serve the space science community for both medium and high data rate downlinks.

7. The frequency band from 13.772 – 13.778 GHz has been in use for many years to provide a communication link for the Space Shuttle, and more recently, the International Space Station. The band is shared with both terrestrial radar systems and fixed-satellite systems (operating from geostationary orbit). To accommodate the introduction of very small aperture terminals (VSAT) within the fixed-satellite service, WRC 2003 increased the allocation to the SRS from 6 MHz to 10 MHz (13.770 – 13.780 GHz), and adopted appropriate criteria that will facilitate sharing between these two space services.

8. Further SFCG should offer congratulations to our Russian colleagues who saw, finally, the fruits of their endeavors to obtain a primary allocation to the space research and space operation services (Earth-to-space) in the 250 – 300 MHz range.

It should be noted that some of these issues have been around, unresolved, since WRC 1995. To have cleared them from the agenda for the next WRC at a time when ITU-R is looking for ways of cutting the budget is very timely.